Traffic Safety Facts
Traffic Tech – Technology Transfer Series
NHTSA
www.nhtsa.gov
Number 325
May 2007

A Study of Nighttime Seat Belt Use in Indiana

Background

The United States has made great strides in increasing use of seat belts, with nationwide belt use now exceeding 80 percent according to NHTSA's National Occupant Protection Use Survey (NOPUS). The NOPUS, however, as well as nearly all other direct observation studies of seat belt use, are conducted during daylight hours. Recent research suggests that nighttime seat belt use may be lower than belt use rates during the day. To date, those studies have been conducted in a limited number of geographic areas. The objective of this project was to obtain a Statewide measure of nighttime belt use in a geographic area where no such Statewide measure had as yet been obtained, and compare that measure to the State's daytime usage. A secondary goal was to assess change in daytime and nighttime usage associated with the May 2006 *Click It or Ticket* (May Mobilization) campaign.

Methods

Based on multiple criteria, Indiana was chosen as the State in which to conduct the nighttime seat belt observation survey. Two nighttime surveys were planned by this project, one immediately preceding the May 2006 Mobilization and one at its conclusion. The nighttime surveys were designed to match as closely as possible daytime belt observation surveys being conducted by the State of Indiana both before and after the Mobilization. The daytime surveys were Statewide probability-based surveys meeting all of the NHTSA requirements under section 157. The nighttime surveys used the same sites, and made every attempt to collect data from each site during the same night of the week as the daytime data was collected. A longer nighttime field period necessitated by the expense of the night vision equipment precluded same-day day and night data collection for all sites.

Trained field staff observed shoulder belt use, sex, age, seating position, vehicle type, and vehicle purpose (commercial or noncommercial) of drivers and front-right passengers during nighttime hours. Motorists traveling in passenger cars, sport utility vehicles, large vans, minivans, pickup trucks, and box trucks were included in the data collection. Data collection for the first nighttime wave (pre-Mobilization) took place April 17-30, 2006; data collection for the second nighttime wave (post-Mobilization) occurred June 5-18, 2006.

Nighttime Seat belt Use

The overall nighttime seat belt use results are presented in Table 1. The nighttime statewide belt use rates for Indiana were 79.0 ± 1.9 and 74.0 ± 2.2 percent, respectively for waves 1 and 2. Z-tests were performed to compare means across survey waves. The results of these analyses allowed for rejection of the null hypothesis at the $p<0.001$ level. In other words, overall nighttime seat belt use decreased at a statistically significant level across the mobilization period. Table 1 also shows seat belt use rates by vehicle seating position. The z-tests performed on the belt use rates within each seating position across the survey waves revealed that belt use significantly decreased for drivers ($p<0.001$), but not for passengers. During wave 1, belt use was statistically significantly higher for passengers than drivers ($p<0.05$), with no significant difference observed during wave 2.

As is typically found in seat belt use research, belt use for males was significantly lower than that for females in both survey waves. The *z*-tests that were performed to test these means found the difference to be statistically significant at the $p<0.001$ level for each wave. Statistically significant decreases were also observed within each sex across the survey waves ($p<0.05$: males; $p<0.01$: females).

Nighttime seat belt use rates by vehicle type are also shown in Table 1. When comparing the belt use rates within each vehicle type across the survey waves, statistically significant decreases in seat belt use were observed for pickup truck and SUV occupants ($p<0.05$).

As is typically found in seat belt research, motorists traveling in pickup trucks had the lowest observed seat belt use rates of any vehicle type during both survey waves. These

rates were significantly lower ($p<0.001$) than the rates observed for occupants of cars, minivans, and SUVs. Belt use for those in pickup trucks was also significantly lower than for large van occupants during wave 2 ($p<0.05$), but not during wave 1. These results are also not surprising since the seat belt use law for Indiana exempts motorists traveling in pickup trucks. The z-tests performed on the belt use rates for motorists traveling in large vans, revealed that these occupants displayed significantly lower belt use than those traveling in cars and minivans during both survey waves ($p<0.05$). During wave 1, this rate was also statistically lower than the observed belt use of SUV occupants ($p<0.05$). When rates for occupants of cars, minivans, and SUVs were compared with one another, the only significant difference was observed during wave 2 between those in cars and SUVs ($p<0.05$).

Table 1: Nighttime Shoulder Belt Use, Confidence Interval, and Unweighted n by Wave, Vehicle Type, and Subgroup

	Wave 1: Pre-Mobilization		Wave 2: Post-Mobilization	
	Percent Use ± CI	n	Percent Use ± CI	n
Overall	79.0 ± 1.9	3,896	74.0 ± 2.2	5,003
Seating Position				
Driver	78.6 ± 2.0	3,139	73.4 ± 2.3	3,937
Passenger	82.0 ± 2.9	757	76.7 ± 5.0	1,066
Sex				
Male	73.1 ± 3.1	2,345	68.2 ± 2.6	2,951
Female	88.2 ± 2.0	1,538	83.2 ± 2.7	2,047
Vehicle Type				
Car	83.1 ± 2.4	2,303	81.5 ± 2.8	2,917
SUV	83.0 ± 3.2	619	76.5 ± 5.1	791
Minivan	82.9 ± 4.4	352	84.8 ± 5.3	464
Large Van	67.8 ± 16.9	50	66.8 ± 13.5	66
Pickup	61.7 ± 6.2	572	52.2 ± 6.0	765

Comparison of Daytime to Nighttime Seat Belt Use

The nighttime survey waves were designed, conducted, and analyzed by the NHTSA contractor. The two daytime waves were designed and conducted by contractors (Center for the Advancement of Transportation Safety, or CATS) working for the State of Indiana. Overall daytime rates reported here are based upon data generously provided to the NHTSA contractor by CATS to allow for study comparisons. These data were analyzed by the NHTSA contractor for comparison purposes using the same procedures utilized by CATS.

Overall belt use rates observed during the daytime and nighttime survey waves are presented in Table 2. Belt use observed during the daytime and nighttime pre-mobilization waves was very similar. During the post-mobilization waves, daytime belt use was 10.3 percentage points higher than nighttime use. The two-tailed *z*-tests performed on these data revealed a significant difference at the $p<0.001$ level. Comparison of the two daytime waves to one another also revealed a statistically significant increase in daytime belt use following the mobilization activities ($p<0.001$). Additionally, as mentioned earlier, the overall analysis of the pre- and post-mobilization nighttime survey waves revealed a statistically significant decrease in seat belt use during this time period.

Table 2: Overall Daytime and Nighttime Seat belt Use Within Each Wave (Percent Use, Confidence Interval, Unweighted n)

Daytime Pre		Daytime Post	
Percent Use ± CI	n	Percent Use ± CI	n
79.7 ± 1.3	19,077	84.3 ± 1.4	19,934
Nighttime Pre		**Nighttime Post**	
Percent Use ± CI	n	Percent Use ± CI	n
79.0 ± 1.9	3,896	74.0 ± 2.2	5,003

How to Order

To order ***A Study of Nighttime Seat Belt Use in Indiana*** (29 pages), prepared by the University of Michigan Transportation Research Institute (UMTRI), write to the Office of Behavioral Safety Research, NHTSA, NTI-130, 400 Seventh Street SW., Washington, DC 20590, fax 202-366-7096, or download from www.nhtsa.dot.gov. Alan Block was the Contracting Officer's Technical Representative for this project.

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